



Western Waterslager Times

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(Newsletter Editor: Fatih Kandil)

Editor's Note

Dear Members of Western Waterslager Club,

I hope this newsletter finds you all well and healthy. The breeding season is here and I wish you all a successful breeding season for 2021. I have a favor to ask from all friends in our hobby. If you have a youtube channel for your waterslager canaries, please send them to me so that I can publish that for all.

Thank you!

A quick interview with Judge Bora Ergun

For this edition I thought about reaching out to our International Judge, Bora Ergun and he generously responded to my questions on breeding season tips. As many of you know, he has been to the States twice and judged at our shows and he also has been judging waterslager canaries successfully in various countries and continents.

Question (-) During the breeding season, do you have any special interventions for the young males, which would help to get the best songs possible from them.

BE : Early detection of the young males and their separation from the young female canaries will always be helpful. This way the number of young birds in the flight cage will be less, the mentors and the young males will not be distracted by the young females. Also it will be better to have the mentor birds in the same flight cage rather than keeping them at a separate nearby cage. One thing we need to keep in

mind is, it is highly likely that the young males will emulate from the dominant male's song which can be both an advantage and disadvantage for the training of the young males.

Question 2-) Our female birds are getting very tired throughout the breeding season. How do you support your female birds so that they still complete the breeding season in good health?

B.E. : In order to maintain the most supportive breeding environment for the female birds, I only get a max of three clutches. Also the quality of the egg food, other supplementary feed and effective use of light are crucial. There is one sensitive area about the egg food is, making sure that the feeding is done in a balanced manner. If not, then the female bird will continue to lay eggs even after the breeding season which will be further tearing them down. Therefore, the feeding balance and quality before and after the breeding season is always key. In terms of effective use of light, I personally follow the Dr. Couffel's web site. Once the breeding season is over, we immediately decrease the light duration. In order for them to experience a successful molting season the light needs to go down between 8-10 hours per day. I believe, all breeder should take a look at Dr. Couffel's website and develop a better understanding on the effective use of light for various stages of canaries life cycles.

Question 3-) Sometimes the song quality of our male birds change after the breeding season. What can we do to minimize that potential?

BE : Sometimes, whatever we do their songs may differ. In order to minimize those changes and their impact on the rest of our birds, we need to be very careful and alert on those unwanted or low quality tunes and once identified, those birds should be separated accordingly. The mentor candidate males or the mentors should be kept at dim light environment throughout the year. Also I suggest that those male birds are taken to large flight cages at least twice a month and let them relax. It should be one day only and during that one day, they should be allowed to fight with each other, take bath and enjoy greens and fruits for a good rejuvenation. Hopefully these will help minimize the risk of such modifications in their songs even after the breeding season.

Question 4-) What is your timeline for breeding season for your waterslager canaries.

BE : I believe each breeder should come up with their own breeding calendar based on the geographical conditions where they live and the physical breeding environment they have at their own places. I live in Ankara, a city with cold and harsh winter conditions. Also my aviary room does not get much day light and I am not able to introduce much heat. Therefore, the breeding season begins in March and ends either in June or Mid July.

While cleaning a closet in my bird room I found a treasure trove of old newsletters and articles that I have saved over the past 20 years in the hobby. I've retyped the following articles of some that I find especially inspirational this time of year. I hope you do too! ~ Bonnie Black

If I remember right, Jim Clever authored some articles in a book called something like Brats in Feathers, Keeping Canaries that was written by "Robirda" McDonald.

THE EGG - A Small Treasure

By Jim Clever

A bird's egg is nature's way of reproducing the species and contains all the essential nutrients for life. All the required nutrients are packed into the yolk and albumen (egg white) before it is laid, since the egg is a sealed unit. A fertile egg must contain the exact amount of water, protein, carbohydrates, minerals, vitamins and fats which are needed, since any deficiency will reduce the embryo's ability to grow, hatch and survive. The female gamete, the ovum, is the largest cell known to science; but the male cell (gamete), the spermatozoon, is truly microscopic. However, the nucleus of the ovum is a tiny white 'speck', smaller than a pinhead, found on top of the egg-yolk; this is where the sperm (the male gamete) must 'drill' into the ovum and combine it's DNA with that of the female gamete to form the new living embryo.

The delicate structures of the egg are 'assembled' in four precise stages:

- 1) First the yolk and ovum develop in the ovary, among a 'grape-like' cluster of similar ovules, or miniature yolks. The yolk, together with its unfertilized blastoderm, (the ovum), matures in the ovary until it is released into*

the 'infundibulum' (the upper funnel) of the oviduct, where it encounters the male sperm and is fertilized.

- 2) The fertilized egg with its microscopic embryo now passes down to the 'magnum' (the upper middle section of the oviduct), where a layer of watery albumen (the egg-white) envelops the yolk in a thin sack. At opposite ends of the yolk, thin strands of albumen become twisted to form a rope-like 'chalaza'; these two cords suspend the yolk centrally in a floating 'hammock' as it travels down the oviduct; the chalaza prevent the yolk from rising to bruise itself against the shell membranes. Before the yolk leaves the 'magnum' the remaining volume of watery albumen is wrapped around it.*
- 3) The developing egg then enters the 'isthmus' (the lower mid-section of the oviduct) where the yolk and albumen are completely encapsulated in two loose-fitting shell membranes.*
- 4) The egg then passes on to the 'uterus', where the final stage of egg formation occurs. About 80% of the egg's development is spent in the uterus; here the shell membranes tighten around the yolk and albumen, and the outer eggshell is finally secreted.*
- 5) Once the shell has hardened the finished egg passes down to the cloaca and is laid. The whole process takes about 24 hours. The hen lays one egg per day, until she has a clutch of 3-6 eggs, depending on the breed of canary. She then incubates them for 13 days, and our 'small treasures' hatch into the next generation of 'show winners'!*

The Miracle of the Hatching Egg **by Jim Clever**

As the embryo of the fertile canary egg develops, the chick gradually transfers its head from the egg's 'pointed' end, toward the air chamber in the 'blunt end, and

tucks its head under its right wing. Since the unhatched egg is a 'closed' system, there is little exchange of gases between the embryo and the external environment. As the chick grows, blood, gases and nutrients circulate in the allantois, a membranous sac that develops from the posterior part of the alimentary canal in the embryos of mammals, birds, and reptiles. But as the chick grows, the exchange of gasses within the allantois, eventually fail to meet the needs of the developing chick. The rising level of carbon dioxide within the egg eventually triggers spasms in the neck muscles of the embryo, causing the chick's head to 'jerk' until its beak ruptures the membrane of the air chamber of the brood end of the egg.

The chick takes its first breath and its lungs begin to function as it breathes the air within this chamber. At this time the left-right cardio-vascular shunt in the embryo's immature heart closes and the heart-lung system begins to function normally. The elevated carbon dioxide levels also cause the abdominal muscles to contract, pulling the external yolk sac within the abdominal cavity, where it is slowly absorbed.

As the chick consumes the oxygen in the air chamber, the carbon dioxide level rises again, to as much as 10%, triggering contractions in the neck muscles. During one of these spasms, the 'egg tooth' on the chick's beak chips through the egg shell, forming a 'pip' hole, which allows fresh oxygen to enter the air chamber.

Now, the chick begins to struggle for its life. Muscle spasms of the neck, back and abdomen, force the chick to wriggle and rotates its position from the first 'pip' hole, ever so slightly. The neck muscles contracts again and another 'chip' is made alongside the first. These small perforations, or 'pips' are always made in a counter-clockwise direction. The chick rotates its position, a muscle spasm occurs, another chip in the shell is made, and so on, until a ring of perforations girdles the shell. Eventually, the chick has chipped away enough of the shell to loosen this 'cap' and it begins to kick with its legs, levering away the cap to escape from the prison of the egg.

In a small species, like the canary, the entire process from breaking into the air chamber and pipping the shell takes about three hours. The interval from pipping to kicking free from the egg can take as little as 30 minutes, if conditions are right.

However, a number of 'fatal flaws' can occur during the final hours of the chick's development and hatching; three that result in 'dead-in-shell' are described here:

- 1) It often happens, if an egg is more rounded than oval in shape, that the chick ends up with its head at the wrong end of the egg, away from the air chamber.

This is lethal in most cases because the chick cannot penetrate the air chamber to obtain its first breath and suffocates.

- 2) *Similarly, if the chick's head becomes trapped under its left wing, rather than its right wing, this will be fatal in nearly all cases. The chick is genetically 'reprogrammed' to turn counter-clockwise as it pips the shell, but if the head is locked beneath the left wing, its body gets in the way and 'pipping' cannot take place.*
- 3) *Finally, if the chick's feet are positioned above its head, this will also be lethal, since it will be unable to kick free of the shell. **

So, once again nature gives us the 'little gift' of a newly hatched canary. But the true miracle is that this frail little bundle of life hatches at all!

- **REFERENCES:**

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Inside the Incredible Egg
"The Chronology of Embryonic Development"
by Jim Clever

Temperature is the most critical factor for the development of the embryo inside a canary egg. If the temperature rises above or falls below the optimum incubation range, life ends. Believe it or not, this optimum temperature falls within a ra very narrowly defined range of just hal a degree, from 99.5°F - 100°F (37.5° C-37.78°C) for ALL species of birds. The body temperature of an incubating chicken is 107°F, while that of a sitting canary hen may reach 100° F, but the temperature inside the eggs of both species must never exceed 100°F. The hen achieves this by constantly turning and rearranging her clutch. The surface of the egg may be warmer in direct contact with the hen's 'brood

patch', but she carefully turns and rotates her eggs so that the interior of the egg remains a nearly constant 100°F.

The germinal disc, the blastoderm, of a fertilized egg begins to develop even before the egg leaves the warm confines of the hen's body. Within two hours of fertilization, the newly formed cell, containing half the DNA of each parent, divides to form two cells. Cell-division continues so that by the time the egg is laid, a ball of undifferentiated cells sits on the upper surface of the egg yolk, where it will soon become the embryo. When the egg is laid in the nest, the internal temperature falls below 80° (26.7°C), cell-division stops and the egg becomes dormant. (This is why it is so important, if you 'pull' eggs, that you store them in a cool area between 50-65°F). Storing eggs at 80°F or above will cause a slow growth of these cells which results in the eventual weakening and death of the embryonic cells. Eggs kept at temperatures below 40°F (4.4°C) will also kill these fertile cells.

Once the canary hen begins incubating her eggs, and they reach the correct internal temperature, a number of events occur in rapid succession. This sequence is remarkable!

On the First Day:

- 10th hour - minute canary embryo is visible
- 11th hour - alimentary (digestive) tract appears
- 12th hour - vertebral column starts to develop
- 13th hour - head begins to form
- 15th hour - heart and eyes begin to form
- 21st hour - ear formation begins

Second Day

- Heart begins beating
- Legs and wings begin to grow
- Tongue and nostrils start to form

Third Day

- Formation of reproductive organs and differentiation of sex

Fourth Day

- Beak begins to form

Fifth Day

- *Down and feather follicles begin to form*

Sixth Day -

- *Beak begins to harden*

Seventh Day

- *The halfway point to hatching! All the above tissues and organs continue to grow and develop.*

Eighth Day

- *Appearance of leg scales and toenails*

Ninth Day

- *A critical event, the embryo changes position so that its head and shoulders are at the 'blunt' end of the egg.*

Tenth Day

- *Scales, toenails, and beak firm and harden*
- *Beak turns toward the air chamber*

Eleventh Day

- *The yolk sac starts to be absorbed into the body cavity*

Twelfth Day

- *Canary Chick gills all the space in the egg except the air chamber*

Thirteenth Day

- *Neck spasms triggered by rising carbon dioxide levels within the egg, cause chick to break into the air chamber and take its first breath. Carbon dioxide levels begin to rise again as the chick consumes the oxygen in the air chamber. Abdominal contractions suck the yolk sac into the chick's body. Neck, abdominal, and back-muscle spasms occur causing the chick to 'pip' a hole in the egg and the hatching process begins.*

Fourteenth Day

- *A new canary chick**

The development of the canary embryo is a progressive, systematic, 'step by step' process. There is a definite timetable for the development of each part of the chick's body. So, keep those canary hens con-

tent and quiet with minimal disturbance; supply them with adequate food and water, and they will reward you with a clutch of tiny, bobbing heads, gaping mouths, and your next generation of potential 'show winners'.

- **References:**

Stromberg, J., A Guide to Better Hatching, Stromber Publishing Co., Fort Dodge, IA 1975 Cornell Extension Bulletin 205, Cornell University, Ithaca, NY